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A contribution to the gnaphosid spider fauna of Turkey (Araneae: Gnaphosidae)

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Abstract

Two species of family Gnaphosidae are reported from Turkey for the first time. They are *Gnaphosa montana* (L. Koch, 1866) and *Zelotes solstitialis* Levy, 1998. The morphological characters and geographical distribution of the two species are presented.

Keywords: Spiders, Araneae, Gnaphosidae, New records, Turkey.

Introduction

Gnaphosid spiders are generally characterized by having barrel-shaped anterior spinnerets that are one spinneret diameter apart. In Gnaphosidae, 1975 species belonging to 116 genera have been described all over the world (Platnick, 2006). This family is the most abundant and one of the most diverse of all spider families in Turkey. Until now, 87 gnaphosid species belonging to 20 genera were recorded from Turkey (Ovtsharenko *et al.*, 1992, Topçu *et al.*, 2005, 2006, Özdemir *et al.*, 2006, Seyyar *et al.*, 2006, Varol *et al.*, 2006).

In this study, we report two ground spider species as new records from Turkey. For each species, the collected material, localities (with GPS co-ordinates), genitalia drawings and general distribution are given.

Material and Methods

In this study, most of specimens were obtained from pitfall traps and under stones in central parts of Turkey. Examined specimens are deposited in the Arachnology Museum of Niğde University (NUAM). The specimens were preserved in 70% ethanol. The identification and drawings were made by means of a SZX9 Olympus stereomicroscope with camera lucida. For the identification of the species, the works of Chatzaki *et al.* (2003), Levy (1998), Ovtsharenko *et al.* (1992) and Heimer & Nentwig (1991) were consulted. Length of leg includes coxa and trochanter. All measurements are in millimetres.

Results

Gnaphosa montana (L. Koch, 1866)
Material examined: TURKEY**:** Niğde province, İtulumaz Mountain (1400-1920 m.) (37˚57'N, 34˚42'E), 22.VII.2004. Depository: NUAM GNA 51/0117-120 (2♂♂, 4♀♀). Collected from under stones.
Male: Body length 9.4-10.2; carapace length 3.2-4.1, width 2.2-2.8; length of legs: I 7.1-8.7, II 6.2-6.9, III 5.9-6.2, IV 8-9.4; leg I: coxa 0.75-0.9; trochanter 0.3-0.5; femur 1.8-2.1; patella 0.75-0.9; tibia 1.5-1.9; metatarsus 1.1-1.3; tarsus 0.9-1.1.
Female: Body length 12.3-14.8; carapace length 5.3-6.4, width 3.7-4.8; length of legs: I 15.15-15.5, II 12.15-12.35, III 11.35-11.7, IV 16.6-17; leg I: coxa 1.8-1.95; trochanter 0.8-0.95; femur 3.2-3.6; patella 1.75-1.85; tibia 2.8-2.95; metatarsus 2.15-2.3; tarsus 1.92-2.
Description: Carapace reddish-brown. Distal leg segments more brightly reddish, eye area and chelicerae darker. Sternum elliptic. Abdomen with grey hairs. Epigynum and male palp (Fig. 1) resemble the description of Ovtsharenko *et al.* (1992).
World distribution: Palearctic (Platnick, 2006).

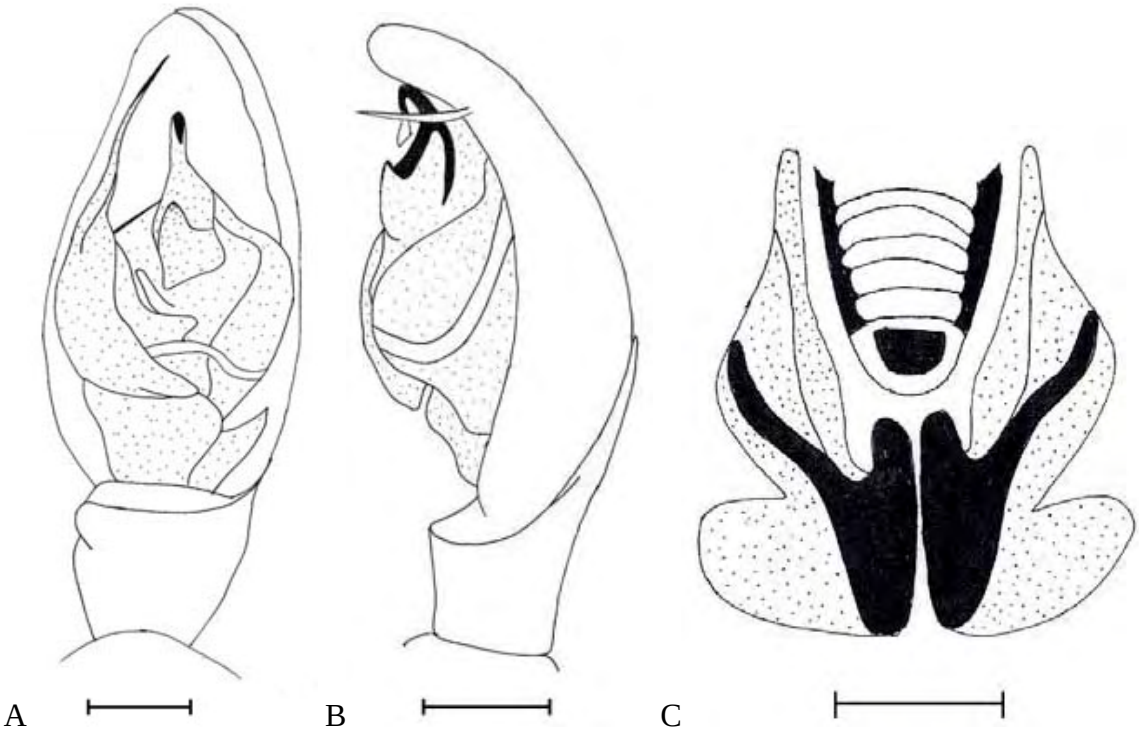

Fig. 1. *Gnaphosa montana* (L. Koch, 1866). A-B. Male palp. A. ventral view. B. retrolateral view. C. Epigynum, ventral view. Scale line = 0.2 mm.

Zelotes solstitialis Levy, 1998
Material examined: TURKEY**:** Niğde province, (37˚58'N, 34˚40'E), 03.VII.2004. Depository: NUAM GNA 51/056-58 (3♂♂). Collected by pitfall traps.
Male: Body length 7-7.8; carapace length 3-3.5, width 1.9-2.3; clypeus length 0.1-0.15; length of legs: I 11.2-12.1, II 9.8-10.4, III 9-9.6, IV 12.8-13.8; leg I: coxa 1.2-1.4, trochanter 0.3-0.5, femur 2.4-2.7, patella 1.3-1.5, tibia 2-2.3, metatarsus 1.7-2, tarsus 1.5-1.7.

Description: Carapace dark brown to black, flattened or slightly elevated at middle with short distinct fovea. Posterior median eyes the largest. Chelicerae with 4-5 promarginal teeth. Opisthosoma greenish brown, spindle-shaped, anterior spinnerets longest. Sternum oval. Labium longer than wide with dark edges. Legs light brown. Male palp (Fig. 2) resembles the description of Levy (1998) and Chatzaki *et al.* (2003).
World distribution: Crete, Israel (Platnick, 2006).

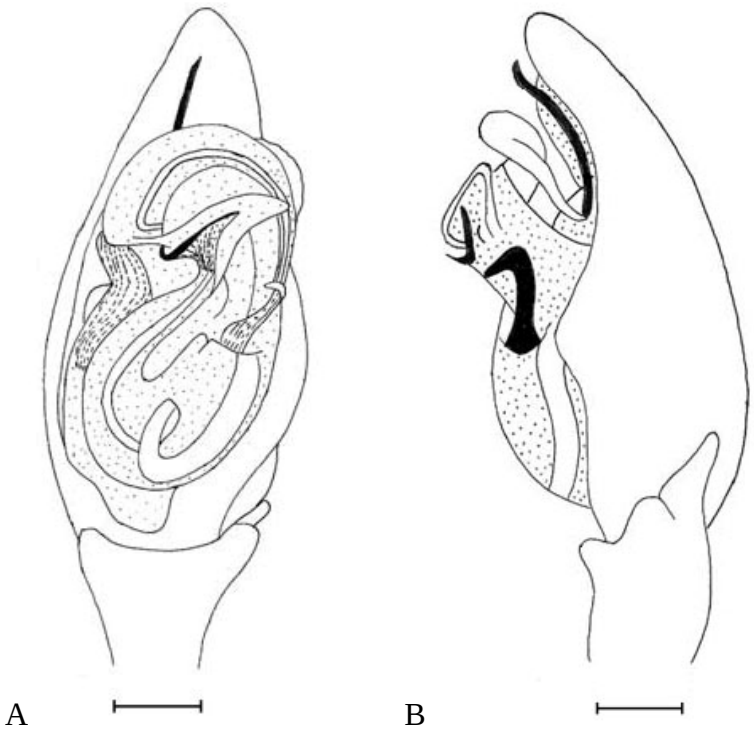

Fig. 2. *Zelotes solstitialis* Levy, 1998. A-B. Male palp. A. ventral view. B. retrolateral view. Scale line = 0.2 mm.

Discussion

Zelotes solstitialis is close to *Z. caucasius* (L. Koch, 1866), but due to the fact that: 1. the male of *Z. solstitialis* has no prolateral tegular apophysis, 2. the gathering point of cymbium and embolus is wide, and 3. the presence of a ventral lobe of tibial apophysis, it can be distinguished from *Z. caucasius*. Our *Z. solstitialis* samples are similar to the samples of Crete and Israel but their bodies are bigger. The recording of this species from Turkey widens its distribution. The morphometric measurements and other characteristic features of our *G. montana* samples are not different from European specimens.

Acknowledgment

We are very grateful to Dr. Maria Chatzaki (Crete) for her advice and valuable comment.

References

Chatzaki, M., Thaler, K. & Mylonas, M. 2003. Ground spiders (Gnaphosidae; Araneae) from Crete and adjacent areas of Greece. Taxonomy and distribution. III. *Zelotes* and allied genera. *Revue suisse de Zoologie*, 1109: 45–89.

Heimer, S. & W. Nentwig. 1991. *Spinnen Mitteleuropas: Ein Bestimmungsbuch*. Verlag Paul Parey, Berlin, 543 pp.

Levy, G. 1998. The ground-spider genera *Setaphis*, *Trachyzelotes*, *Zelotes*, and *Drassyllus* (Araneae: Gnaphosidae) in Israel. *Israel Journal of Zoology*, 44: 93-158.

Ovtsharenko, V.I., Platnick, N.I. & Song, D.X. 1992. A review of the North Asian ground spiders of the genus *Gnaphosa* (Araneae, Gnaphosidae). *Bulletin of American Museum of natural History*, 212**:** 1-88.

Özdemir, A., Varol, I., Akan, Z., Kütük, M., Kutbay, F. & Özaslan, M. 2006. The fauna of spiders (Araneae) in the Nizip and Karkamış – Gaziantep (Turkey). *Biotechnol. & Biotechnol. Eq.*, 20/2006/1: 74-77.

Platnick, N.I. 2006. *The world spider catalog, version 7.0*. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog/index.html.

Seyyar, O., Topçu, A. & Demir, H. 2006. New records of ground spiders (Araneae: Gnaphosidae) from Anatolia. *Zoology in the Middle East*, 38: 118-120.

Topçu, A., Demir, H. & Seyyar, O. 2005. A checklist of the spiders of Turkey. *Serket*, 9(4): 109-140.

Topçu, A., Demir, H., Seyyar, O. & Türkeş, T. 2006. The spider fauna of the Gülek Pass (Turkey) and its environs (Araneae), European Arachnology 2005 (Deltshev, C. & Stoev, P., eds.), *Acta zoologica bulgarica*, Special Issue. (In press).

Varol, M.I., Mart, C., Özaslan, M., Bayram, A., Akan, Z., Özdemir, A. 2006. Investigation on Spider Fauna of Hancağız Dam-Nizip (Turkey). *Journal of Biological Science*, 6(2): 344-346.

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Mitigating scorpion-sting syndrome in the Middle East: understanding the substratum preferences of *Androctonus crassicauda* (Olivier, 1807) (Scorpiones: Buthidae)

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Abstract

Hundreds of medical and toxicological reports have been published concerning the venom of medically important scorpion genera (e.g. *Androctonus* and *Leiurus*) and the treatment of their stings. Two particular studies (Radmanesh, 1998; Al-Sadoon & Jarrar, 2003) reported over 100,000 scorpion-sting cases in Iran and Saudi Arabia in a five-year period. This "scorpion-sting syndrome" is significant and counter-productive for human well-being and economic growth. Therefore, a better understanding of scorpion habits and preferences allows the design of mitigating strategies, which should reduce envenomation in underdeveloped/developing communities in the Middle East. A substratum-based study was devised to interpret the refuge and roaming preferences of *Androctonus crassicauda* (Olivier, 1807). Observations (n = 570) of 15 *A. crassicauda* specimens were recorded in north-central Iraq during the summer of 2004. Each scorpion was given a choice between either a sandy or rubble-like substratum, which mimicked those found in Iraqi communities. Two main results were obtained: *A. crassicauda* is (1) ~2.5 times more likely to choose already-made burrows in the sandy substratum, and (2) ~2.0 times more likely to roam atop sandy substratum than atop open-framework rubble. Consequently, four strategies are suggested to militate against infestation in households and community common areas.

Keywords: Scorpiones, Buthidae, *Androctonus crassicauda*, sting, Middle East.

Introduction

Scorpion-sting syndrome is a threat to human welfare and productivity in many countries (see Hutt & Houghton, 1998 for review); for example, Mexico reports over 200,000 cases per annum (Lourenço & Cuellar, 1995; Jimenez-Ferrer *et al*., 2005) and other countries report from a couple hundred cases per annum to a few thousand (Table 1). In the Middle East (e.g., Saudi Arabia and Iran) there are two studies presenting over 100,000 sting cases, which were reported during a five-year period (Radmanesh, 1998; Al-Sadoon & Jarrar, 2003; Table 1). Presumably, most of these scorpion-sting cases occur because of ignorance of scorpion habits and preferences by the hard-working people who must cohabitate with them.

Table 1: Representative list of scorpion-sting cases from 12 countries around the world. Cases are based on published reports; reported numbers are minima.

List of Scorpion-sting Syndrome reports					
Country	**Occurrence**	**Reference**	**Country**	**Occurrence**	**Reference**
Algeria	1,300	Balozat, 1964	Mexico	>200,000	Dehesa-Davila *et al*., 1994
Australia	>45	Isbister, 2004	Morocco	40,000	Ghalim et al., 2000
Colombia	>130	Otero *et al*., 2004	Saudi Arabia	72,168	Al-Sadoon & Jarrar, 2003
India	38	Bhattacharyya *et al*., 1992	Trinidad	175	Waterman, 1950
Iran	>36,463	Radmanesh, 1998	Tunisia	>275	Goyffon *et al.*, 1982
Libya	900*	WHO, 1981	Turkey	>152	Ozkan & Kat, 2005

*per 100,000 people.

One of the Middle East's more problematic genera, *Androctonus* spp., are medically important (Ismail *et al.*, 1994) and a common pest. Al-Sadoon & Jarrar (2003) reported that about half of the scorpion-sting cases in Saudi Arabia, were from a "black scorpion" (likely *Androctonus* spp.). Because of *Androctonus* spp. abundance and toxicity, it is crucial to understand their habits, in order to mitigate the danger they pose to communities. In recent years, there has been a push toward understanding the toxicology of scorpion venom and the treatment of scorpion-sting syndrome by means of antivenin (serotherapy) and/or local herbal/plant remedies (Ismail, 1995 & Hutt & Houghton, 1998, respectively for reviews). Although these studies are crucial to patient care, there is, however, another approach to this problem, which will prevent scorpion-sting syndrome – behavioural studies. By better understanding a scorpion's habits (e.g., it's substratum preferences – where do they prefer to hide and roam?) we can minimize/reduce sting cases; thereby, reducing strain on community healthcare systems. If we know where scorpions hide and roam we can eliminate them and/or avoid them.

In order to implement either/both of these techniques, a complimentary practice is required – community education. Education can decrease scorpion-sting syndrome by means of a three-step program (Stewart, 2006b): 1) Educate communities about scorpion-sting syndrome and its threat to their welfare and productivity; 2) Educate about *Androctonus* spp. (and other harmful species) habits and preferences; and 3) Equip them with appropriate equipment to locate and eradicate scorpions (i.e. ultraviolet light source).

Fig. 1. Photograph of *Androctonus crassicauda* (Olivier, 1807). Circled section is shown in schematic detail in Fig. 6. Scale bar is in centimetres.

Methods

Species studied. *Androctonus crassicauda* (Olivier, 1807) (Buthidae) is a medically important species (i.v. LD_{50} in mice of 0.32±0.02 mg/kg; Ismail *et al.*, 1994), which inhabits the Palaearctic region, primarily the Middle East (with congenerics also found in North Africa; Fet & Lowe, 2000). Adults of this species vary in colour from light brown to reddish black and can reach lengths greater than 10 centimetres (Fig. 1). Described as a generalist desert species (Fet *et al*., 1998), it has been noted as an anthropotolerant (Crucitti & Cicuzza, 2001) and is commonly found "in the ruins of old, neglected buildings. …" (Birula, 1917; quoted from a Nakhichevan native in modern Azerbaijan).

Fig. 2. Map of Iraq showing study location (~50 kilometres north of Samarra) marked by red circle.

Experiment. In northern Iraq (Fig. 2) during the summer of 2004, 15 adult *A. crassicauda* specimens were located by a 5-LED shortwave ultraviolet light (385nm, 4.0mW) during evening Nautical and Astronomical Twilights (i.e. when the sun was greater than 12 degrees below the horizon) in and around derelict structures. Specimens were found sitting in crevices or pre-made "burrows" at the wall-substratum interface and roaming within one metre of outside walls or resting vertically on the wall face (not greater than 0.5 metre up). Pre-made "burrows" appeared to be interstices or the opportunistic use of removed-animal refuges. The substratum was densely packed silts and sands with areas adjacent walls being broken and fissured. Specimens were of undetermined age and varied from 25 to 40 millimetres in length (pro and mesosoma; Fig. 1). Each scorpion was placed into a terrarium (50cm x 20cm x 15cm), which

comprised 50% sand-based substratum and 50% rubble-based (open-framework) substratum. Each section (sand or rubble) was given one "pre-made" burrow (to replicate a removed-animal refuge) with the rubble section also having natural interstices, which the scorpion could also use as a refuge. Atmospheric and substratum environmental conditions were also measured by means of thermometers (shielded atmospheric and substratum) and a hygrometer (Table 2).

Table 2: Environmental data showing maxima, minima and means for atmospheric temperature and humidity and burrow and substratum temperatures.

	Temperatures and Humidity (^{o}C)				
	Ambient Air	**Sandy substratum**	**Rubbly substratum**	**Burrow**	**Humidity (%)**
Mean	31.9	31.8	32.3	31.3	18.0
Max	40.6	37.6	38.9	36.6	30.0
Min	25.0	26.2	26.6	26.0	8.0

Observations of scorpion activity were completed by means of low-intensity red light (when necessary) at 0730, 1630, 2130 and 2330 hrs. During the morning and afternoon times (0730 and 1630hrs, respectively) there were zero observations of active scorpions (active = ambulation or motionless state with body raised above substratum with tarsi and pectines touching substratum; in or out of burrow; Stewart, 2006a). Activity levels increased to a notable level during the 2130 and 2330 hour time frames. One observation was made per specimen per time period (e.g., 2130hrs) with four possible options (Table 3): The scorpion was either 1) Active in sandy substratum pre-made burrow; 2) Active atop sandy substratum; 3) Active in rubble substratum interstice or pre-made burrow or 4) Active atop rubble substratum. Subsequent to any specimen's experimental use, it was released back to its captured location.

Results

In northern Iraq, 570 observations were recorded during the summer of 2004 regarding *A. crassicauda*'s substratum preferences. The division of observations into either in-burrow or atop substratum was entirely related to scorpion's choice of active location. Of these 570 substratum observations, 386 were in-burrow (henceforth considered burrow preference) and the remainder (184) were atop substratum (henceforth considered roaming preference) (Table 3). Student's t-tests were performed to determine difference significance between sand- and rubble-based substrata for both burrow and roaming preferences. For burrow preference, pre-made burrows in sandy substratum were chosen 268 times; whereas, the rubble-based burrows were selected 118 times. Burrow data suggest that *A. crassicauda* is ~2.3 times more likely to use pre-made burrows in a sandy substratum (ρ = <0.05). For substratum roaming preferences, being active on the sand was observed 122 times versus 62 times on the rubble. This relationship suggests that *A. crassicauda* is ~2.0 times more likely to be out and active atop a sandy substratum (ρ = <0.05).

Table 3: Substratum preference observations showing the 15 specimens (Greek name) and their observed locations during the 2130 and 2330 observational periods. One observation (in burrow or on surface) was possible for each period (2130 and 2330); two possible per day.

	Substratum preference observations			
	Burrow Preference		**Roaming Preference**	
Specimen	**In sandy substratum**	**In rubbly substratum**	**On sandy substratum**	**On rubbly substratum**
omicron	26	0	15	1
pi	23	1	7	1
ro	22	9	5	3
sigma	12	8	9	2
upsilon	33	11	8	3
phi	15	29	0	0
chi	19	10	3	2
psi	19	0	13	10
omega	22	8	11	8
beta2	5	6	7	10
gamma2	17	9	9	6
delta2	13	5	20	8
epsilon2	19	13	8	5
zeta2	15	6	3	2
eta2	8	3	4	1
SUM	**268**	**118**	**122**	**62**
Preference of Sandy over Rubbly Substratum:	***2.3 times*** (ρ = <0.05)		***2.0 times*** (ρ = <0.05)	

Discussion

There are a few plausible reasons for the variation between the sandy and rubbly substratum choices made by the scorpions; for example, environmental factors or mechanical and/or chemical sensory cues. Regarding environmental factors, a scorpion's best defence against changing environment is to use a more climatically equable burrow (Hadley, 1974). Although *A. crassicauda* continually used burrows during this experiment, the burrows' environmental conditions were insignificantly different (~1^{o}C difference for interstitial air and substrata; ρ = >0.05; Table 2). The most likely reason,

therefore, may be related to the scorpion's ability to recognize and interpret mechano/chemosensory signals, which are pertinent to its survivability (e.g. locating prey, relocating its burrow, locating mates, etc.).

Fig. 3. Ventral view of *A. crassicauda* showing pectines (in pink circle). Scale bar is 1 centimeter.

The largest receptors of mechanical and chemical information for the scorpion are its pectines (Fig. 3), which are ventromedial appendages specialized for detection of substances (e.g. odours and tastes) and texture on/of the substratum (Gaffin & Brownell, 1997). This sensory information, involving odours, tastes and texture, may assist the scorpion in a variety of ways: navigation, location of potential mates, tactile use for spermatophore placement, prey capture and predatory avoidance (Gaffin & Brownell, 1997). In order to maximize the efficacy of pectines, ambulation on an uninterrupted and predictable substratum is optimal (Fig. 4). The open-framework, rubbly substratum, however, may not be conducive for pecten sweeping/tapping with the substratum during its ambulation (Fig. 5). In order for a scorpion to breach obstacle groupings (e.g. rubble

or rock piles) similar to and slightly greater than its body length, it must sacrifice pecten contact with the substratum. The "free-floating" pectines, therefore, will not be able to record necessary information about the scorpion's position or other cues (Fig. 5). As an adaptive technique, it appears that *A. crassicauda* opts for an uninterrupted substratum; thereby, increasing its likelihood of returning to its burrow, locating prey and/or receiving other mechano/chemosensory uses.

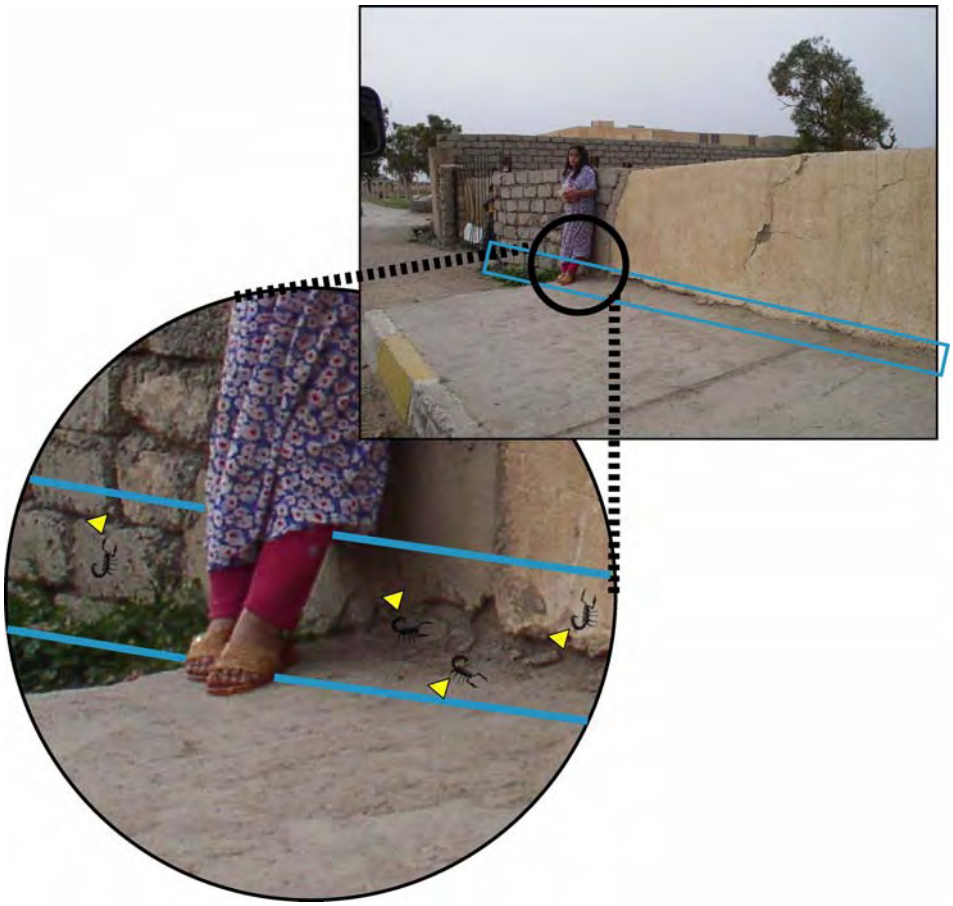

Fig. 4. Photograph of young Iraqi girl standing near a wall showing the main *A. crassicauda* "burrow" and roaming locations. Representative scorpions (also noted by yellow triangles) show the most likely places to find *A. crassicauda*: concrete block interstices and cracked/fissured wall bases, both of which are ubiquitous in underdeveloped/developing communities in the Middle East. Blue blocked area shows probable roaming location.

Another sensory receptor providing location information to the scorpion's brain are their slit sensillae, which are vibration-sensitive portions of their basitarsi near the tarsal joint on each of eight legs (Fig. 6). Slit sensillae can sense vibrational stimuli and are mostly responsive to small amplitude accelerations of the tarsi resting on the substratum (Brownell & van Hemmen, 2001). Together, all eight of these accelerometers make an array capable of determining direction and distance to a set of surface waves

(esp., Raleigh Waves). Because of the rapidity of wave propagation through solids (i.e., rocks), scorpions can only detect and interpret Raleigh Waves travelling more slowly through uncompacted or poorly compacted/porous solids (e.g. sand, concrete, cinder blocks or stucco). Because of the decreased velocities in these substrata (approximately 40-120 metres sec^{-1} for sand), Brownell (1977) suggested that a scorpion can grasp prey in one movement (<20 centimetres distant) and is able to detect and orient toward prey up to 50 centimetres distant (corroborated by Stewart (2006a), personal observations of *A. crassicauda*). Two aspects of surface wave propagation may affect *A. crassicauda* preference for substratum. In a non-sandy (e.g. rock-based) substratum, surface wave velocities are too fast to be resolved by the array of slit sensillae, which are too closely spaced. Because Brownell (1977, 2001) "resolved" a scorpion's ability to detect surface waves to less than 50 centimetres, this may be another reason for the reduction in use of the rubbly substratum. While a scorpion is ambulating a rubbly rock pile, the area of any piece of rubble may be too small to allow both a warning of predators and prey from a reaction-safe distance.

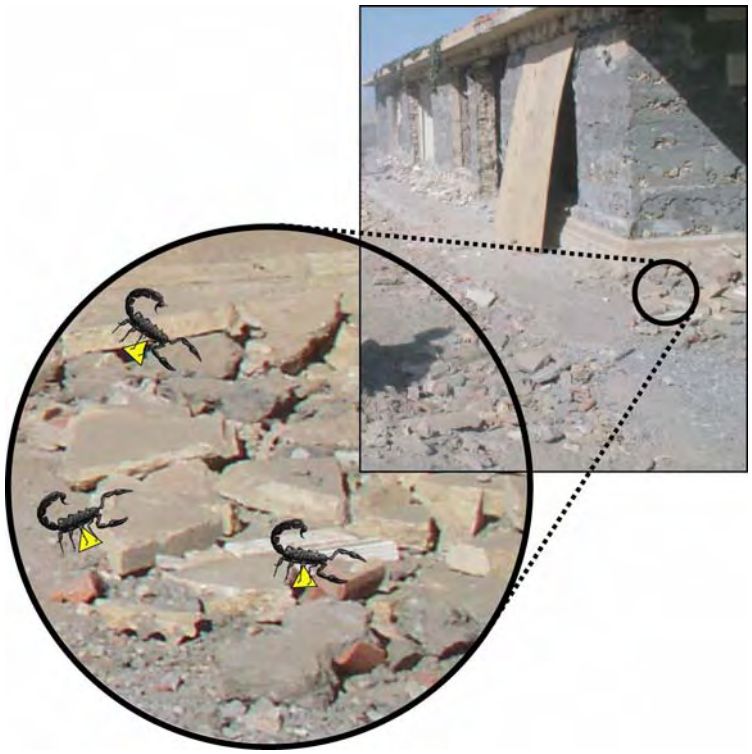

Fig. 5. Unlikely location for *A. crassicauda*. Photograph of a deteriorating building in Iraq; indicative of living conditions in underdeveloped/developing communities. Note the significant amount of rubble accumulating at the base of the building. Circular blow-up shows hypothetical situations where a scorpion is breaching rubble. Note that in certain situations (noted by the hypothetical scorpions) the ventromedial section (pectines; noted by yellow triangles) will be "free-floating" and unable to record information about the substratum.

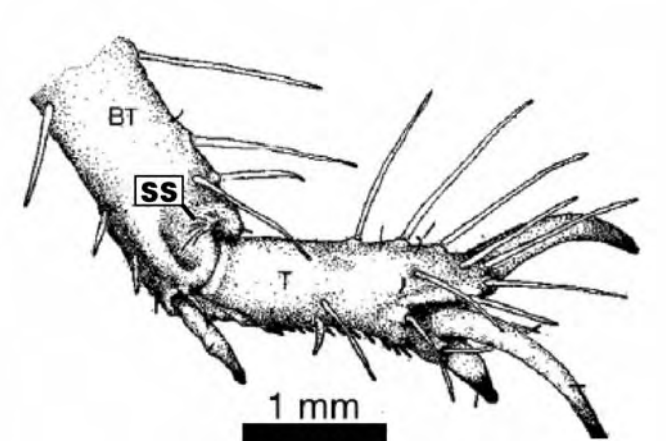

Fig. 6. Schematic diagram of the tarsus (T) showing location of slit sensilla (SS) and basitarsus (BT) (modified from Brownell & van Hemmen, 2001).

Regardless of sensory cue (mechanical or chemical) it appears that *A. crassicauda* is specially adapted toward uninterrupted, continuous substrata; such as, sandy, silty substrata (natural) or cinder blocks, concrete and stucco substrata (anthropogenic). For chemical cues, these substrata ensure a continuous transmission of sensory cues via the pectines. These substrata, moreover, have slower/detectable Raleigh Wave velocities, which allow the slit sensilla to interpret distal prey/predator location information. Lastly, although the anthropogenic substrata are theoretically detectable by the scorpion's slit sensillae, it appears that a reaction-safe distance is imperative to scorpion substratum choice.

Conclusions

Understanding a scorpion's habits, associated with its sensory capabilities (i.e. mechano/chemosensory), can help mitigate "scorpion-sting syndrome" in the Middle East, North Africa and elsewhere by reducing human-scorpion contact. Eradication and/or avoidance of dangerous scorpions' stings will increase human welfare and productivity, which in turn, will decrease community/national monetary support for hospital care of scorpion stings. This is not to suggest that medical and toxicological reports should become useless, for there will always be scorpion stings. It does, however, allow medical professionals to investigate other community/national health issues and concerns. In order to fully affect the mitigation of scorpion-sting syndrome by *A. crassicauda*, the following mitigating strategies are presented to national and community education systems:

1. Ensure all wall-floor conjointments are sealed
2. Fill cracks/interstices at concrete/sand interfaces and repair deteriorated cinder-block-wall joints
3. Reduce refuges by removing crumbled stucco/wall-covering piling at wall bases, rubbish and loose materials
4. Use an ultraviolet light to locate scorpions in small crevices/cracks (primarily in a sandy substratum) in building foundation/walls.

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References

Al-Sadoon, M.K. & Jarrar, B.M. 2003. Epidemiological study of scorpion stings in Saudi Arabia between 1993 and 1997. *J.Venom.Anim.Toxins.incl.Trop.Dis.*, 9: 1-8.

Balozet, L. 1964. Le scorpionisme en Afrique de Nord. *Bulletin de la Société Pathologique Exotique*, 57: 37-38.

Bhattacharyya, B., Das, D.C, Mukherjee, H. & Hati, A.K. 1992. A retrospective study on scorpion sting in the paediatric age group in a hospital in Calcutta. *Indian Journal of Medical Sciences*, 46: 205-208.

(Birula, A.A.) Byalynitskii-Birula, A.A. 1917. *Arachnoidea Arthrogastra Caucasica. Pars I*. In: Scorpiones. Mémoires du Musée du Caucase. Tiflis: Imprimerie de la Chancellerie du Comité pour la Transcaucasie, A(5), 253pp. (in Russian). English translation: 1964. Arthrogastic Arachnids of Caucasia, I. Scorpions. Jerusalem: Israel Program for Scientific Translations. 170pp.

Brownell, P.H. 1977. Compressional and surface waves in sand: used by desert scorpions to locate prey. *Science*, 197: 479-481.

Brownell, P.H. 2001. Sensory Ecology and Orientational Behaviors. In: *Scorpion Biology and Research*. pp. 159-183. Oxford University Press, New York, NY USA.

Brownell, P.H. & van Hemmen, J.L. 2001. Vibration Sensitivity and Computational Theory for Prey-Localizing Behavior in Sand Scorpions. *Amer.Zool.*, 41: 1229-1240.

Crucitti, P. & Cicuzza, D. 2001. Scorpions of Anatolia: ecological patterns. In: *Scorpions 2001. In memoriam Gary A. Polis*. pp. 225-234. British Arachnological Society, Burnham Beeches, Bucks UK.

Dehesa-Davila, M. & Possani, L.D. 1994. Scorpionism and serotherapy in Mexico. *Toxicon*, 32: 1015-1018.

Fet, V. & Lowe, G. 2000. Family Buthidae. In: *Catalog of the Scorpions of the World (1758-1998)*. pp.54-286. New York Entomological Society, New York, NY; 690pp.

Fet, V., Polis, G.A. & Sissom, D. 1998. Life in sandy deserts: the scorpion model. *Journal of Arid Environments*, 39: 609-622.

Gaffin, D.D. & Brownell, P.H. 1997. Response properties of chemosensory peg sensilla on the pectines of scorpions. *J.Comp.Physiol.*, A., 181: 291-300.

Ghalim, N., El-Hafny, B., Sebti, F., Heikel, J., Lazar, N., Moustanir, R. & Benslimane, A. 2000. Scorpion envenomation and serotherapy in Morocco. *Am.J.Trop.Med.Hyg.*, 62: 277-283.

Goyffon M., Vachon M. & Broglio N. 1982. Epidemiological and clinical characteristics of the scorpion envenomation in Tunisia. *Toxicon*, 20: 337-344.

Hadley, N.F. 1974. Adaptational biology of desert scorpions. *J.Arachnol.*, 2: 11-23.

Hutt, M.J. & Houghton, P.J. 1998. A survey from the literature of plants used to treat scorpion stings. *J.Ethnopharmacol*., 60: 97-110.

Isbister, G.K., Volschenk, E.S., Balit, C.R. & Harvey, M.S. 2004. Australian scorpion stings: a prospective study of definite stings. *Toxicon*, 41: 877-883.

Ismail, M. 1995. The scorpion envenoming syndrome. *Toxicon*, 33: 825-858.

Ismail, M., Abd-Elsalam, M.A. & Al-Ahaidib, M.S. 1994. *Androctonus crassicauda* (Olivier), a dangerous and unduly neglected scorpion. *Toxicon*, 32: 1599-1618.

Jimenez-Ferrer, J.E., Perez-Teran, Y.Y., Roman-Ramos, R. & Tortoriello, J. 2005. Antitoxin activity of plants used in Mexican traditional medicine against scorpion poisoning. *Phytomedicine*, 12: 116-122.

Lourenço, W.R. & Cuellar, O. 1995. Scorpions, scorpionism, life history strategies and parthenogenesis. *Journal of Venomous Animals*, 1: 50-64.

Otero, R., Navio, E., Cespedes, F.A., Nunez, M.J., Lozano, L., Moscoso, E.R., Matallana, C., Arsuza, N.B., Garcia, J., Fernandez, D., Rodas, J.H., Rodriquez, O.J., Zuleta, J.E., Gomez, J.P., Saldarriaga, M., Quintana, J.C., Nunez, V., Cardenas, S., Barona, J., Valderrama, R., Paz, N., Diaz, A., Rodriguez, O.L., Martinez, M.D., Maturana, R., Beltran, L.E., Mesa, M.B., Paniagua, J., Florez, E. & Lourenço, W.R. 2004. Scorpion envenoming in two regions of Colombia: clinical, epidemiological and therapeutic. *Trans.R.Soc.Trop.Med.Hyg*., 98: 742-750.

Ozkan, O. & Kat, I. 2005. *Mesobuthus eupeus* Scorpionism in Sanliufra region of Turkey. *J.Venom.Anim.Toxins.incl.Trop.Dis.*, 11: 479-491.

Radmanesh, M. 1998. Cutaneous manifestations of the *Hemiscorpius lepturus* sting a clinical study. *International Journal of Dermatology*, 37: 500-507.

Stewart, A.K. 2006a. Observations on prey-capture behavior of *Androctonus crassicauda* (Olivier, 1807) (Scorpiones: Buthidae) in northern Iraq. *Euscorpius*, 37, 9pp.

Stewart, A.K. 2006b. Mitigating scorpion-sting syndrome in the Middle East: a study of *Androctonus crassicauda* and its substratum proclivities. Abstract for American Arachnological Society's Annual Meeting, Baltimore, MD.

Waterman, J.A. 1950. Two cases of scorpion poisoning characterized by convulsions with electrocardiograms. *Caribbean Medical Journal*, 12: 127-129.

World Health Organization. 1981. *Progress in the Characterization of Venoms and Standardization of Antivenoms.* WHO Offset Publication, Geneva Switzerland; v.58.

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A list of Egyptian spiders (revised in 2006)

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This list includes names of spider species, recorded from Egypt, with their distribution localities. It is preceded by a table which includes names of recorded spider families (40) followed by number of recorded genera (193) and species (385) within parentheses. A few species maybe considered *nomina dubia* and some records are not certain. The verification and corrigenda will be available in a detailed work revising different spider families of Egypt. This work is a trial to bring the author's "Annotated checklist of Egyptian spider species" of 1990 and "A list of Egyptian spiders (revised in 2002)" to be up to date. The recorded localities are plotted on a map. [Abbreviations used: ? = unknown locality (only Egypt), * = Endemic species, Prot. = Protectorate]

Keywords: Spiders, Araneae, Egypt.

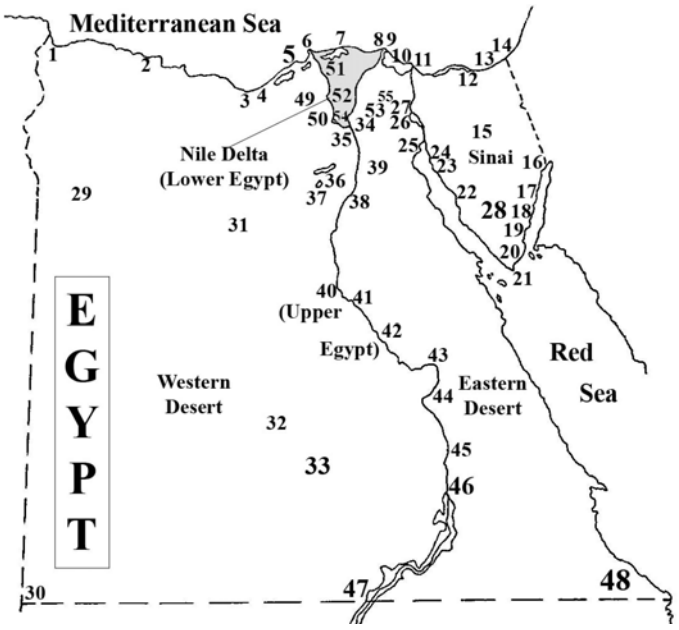
Order Araneida (Araneae, Aranei)
Suborder Opisthothelae
Infraorder Mygalomorphae

Nemesiidae	1 (1)	Theraphosidae	1 (3)

Infraorder Araneomorphae

Agelenidae	5 (7)	Liocranidae	1 (2)	Scytodidae	1 (5)
Araneidae	15 (22)	Lycosidae	20 (44)	Segestriidae	2 (2)
Cithaeronidae	1 (1)	Mimetidae	1 (1)	Selenopidae	1 (1)
Clubionidae	1 (1)	Miturgidae	2 (9)	Sicariidae	1 (1)
Corinnidae	1 (1)	Oecobiidae	2 (7)	Sparassidae	6 (13)
Ctenidae	1 (1)	Oonopidae	4 (5)	Synaphridae	1 (1)
Dictynidae	5 (6)	Oxyopidae	2 (6)	Tetragnathidae	2 (5)
Dysderidae	1 (7)	Palpimanidae	1 (3)	Theridiidae	10 (24)
Eresidae	3 (6)	Philodromidae	3 (18)	Thomisidae	10 (25)
Filistatidae	2 (3)	Pholcidae	5 (5)	Titanoecidae	2 (2)
Gnaphosidae	21 (48)	Pisauridae	4 (4)	Uloboridae	1 (2)
Hersiliidae	2 (2)	Prodidomidae	3 (3)	Zodariidae	5 (8)
Linyphiidae	8 (8)	Salticidae	35 (72)		

TOTAL : 40 Families, 193 genera, 385 species



Map of Egypt.
1-55. Recording localities.

1- El-Sallum. 2- Marsa Matruh. 3- El-Omayed Prot. 4- El-Hammam. 5- Alexandria, Edko, Mariout. 6- Rosetta. 7- El-Burullus Prot. 8- Ras El-Barr. 9- Damietta. 10- El-Manzalah (lake). 11- Port Said. 12- El-Zaranik Prot. 13- El-Arish. 14- Rafah. 15- Mid Sinai. 16- Taba. 17- Abu Galoum Prot. 18- Dahab and Wadi Yah'med. 19- Nabq Prot. 20- Sharm El-Sheikh. 21- Ras Mohammed Prot. 22- En Higiya (north east of Abu Zneima). 23- Ras Sedr. 24- Ain-Musa. 25- Suez. 26- Fayed. 27- Ismailia. 28- St. Catherine, Mount Serbal, Wadi Esla. 29- Siwa Oases. 30- El-Uwaynat. 31- El-Baharia Oases, El-Bawitti. 32- Dakhla Oases. 33- New Valley. 34- Cairo (Heliopolis, Zenhum and Helwan), Wadi Degla (El-Maadi). 35- Giza, Pyramids, Saqqarah, Dahshur. 36- El-Fayum, Kom Osheem. 37- Wadi El-Raiyan. 38- Beni Suef. 39- Wadi Rishrash. 40- Manfalut. 41- Assiut. 42- Sohag. 43- Qena. 44- Luxor. 45- Gebel Silsilis. 46- Aswan, Elephantine and Philoe island; Fatira (Kom Ombo). 47- Wadi-Halfa, Nubia. 48- El-Shalateen, Bir El-Gahliya, Wadi De'eeb. 49- Wadi Natron. 50- El-Tahrir Province. 51- Kafr El-Sheikh. 52- El-Menoufeia, Shebin El-Kom. 53- El-Aasher-Min-Ramadan City (65 km east of Cairo). 54- Nile Barrage, Qalyubia. 55- Salahyeh.

Infraorder Mygalomorphae

Family Nemesiidae Simon, 1892
Nemesia cellicola Savigny, 1825 --- Alexandria

Family Theraphosidae Thorell, 1870
Chaetopelma gracile (Ausserer, 1871) --- Alexandria, El-Fayum, Upper Egypt
Chaetopelma olivaceum (C.L.Koch, 1841) --- Cairo
Chaetopelma shabati Hassan, 1950 --- Cairo, El-Fayum *

Infraorder Araneomorphae

Family Agelenidae C.L.Koch, 1837
Benoitia lepida (O.P.-Cambridge, 1876) --- Abu Galoum, El-Omayed, El-Zaranik, New Valley, Siwa Oases, Upper Egypt, Wadi El-Raiyan, Wadi Natron
Benoitia timida (Savigny, 1825) --- Rosetta
Lycosoides coarctata (Dufour, 1831) --- Alexandria, Nile Barrage
Malthonica pagana (C.L.Koch, 1840) --- Cairo
Tegenaria domestica (Clerck, 1757) --- Rosetta
Tegenaria parietina (Fourcroy, 1785) --- Alexandria
Textrix caudata L.Koch, 1872 --- ?

Family Araneidae Simon, 1895
Agalenatea redii (Scopoli, 1763) --- southern Sinai
Araneus circe (Savigny, 1825) --- Alexandria
Argiope bruennichi (Scopoli, 1772) --- ?
Argiope lobata (Pallas, 1772) --- Alexandria, Cairo, El-Burullus, El-Shalateen, El-Zaranik, Nabq, Ras Mohammed, St. Catherine, Wadi El-Raiyan, Wadi De'eeb
Argiope sector (Forskål, 1775) --- Nubia, Port Said, Siwa Oasis, Upper Egypt, Wadi Natron
Argiope trifasciata (Forskål, 1775) --- Alexandria, Cairo, El-Burullus, El-Tahrir Province, Siwa Oasis, Wadi El-Raiyan, Wadi Natron
Cyclosa deserticola Levy, 1998 --- ?
Cyclosa insulana (Costa, 1834) --- El-Burullus (?), Siwa Oasis, Wadi Natron
Cyrtophora citricola (Forskål, 1775) --- Cairo, Abu Galoum, Nabq, Ras Mohammed, Siwa Oasis, Wadi El-Raiyan, Wadi Natron
Gasteracantha sanguinolenta rueppelli (Strand, 1916) --- ? *
Gea nilotica Simon, 1906 --- ? *
Gibbaranea bituberculata (Walckenaer, 1802) --- Alexandria, Cairo
Hypsosinga albovittata (Westring, 1851) --- Alexandria
Larinia acuticauda Simon, 1906 --- Luxor, Siwa Oasis
Larinia chloris (Savigny, 1825) --- Siwa Oasis, Suez, Upper Egypt
Larinioides cornutus (Clerck, 1757) --- Rosetta
Larinioides suspicax (O.P.-Cambridge, 1876) --- Alexandria, Damietta, El-Fayum, Rosetta, Siwa Oasis, Wadi Natron
Neoscona subfusca (C.L.Koch, 1837) --- Alexandria, Siwa Oasis
Nuctenea umbratica (Clerck, 1757) --- Damietta
Singa lucina (Savigny, 1825) --- Alexandria, Rosetta
Singa semiatra L.Koch, 1867 --- ?
Siwa atomaria (O.P.-Cambridge, 1876) --- Aswan, Cairo, Siwa Oasis, Upper Egypt

Family Cithaeronidae Simon, 1893
Cithaeron praedonius O.P.-Cambridge, 1872 --- Alexandria

Family Clubionidae Wagner, 1887
Clubiona listeri Audouin, 1825 --- ? *

Family Corinnidae Karsch, 1880
Castianeira antinorii (Pavesi, 1880) --- Cairo (Giza), Siwa Oasis

Family Ctenidae Keyserling, 1877
Anahita pallida (L.Koch, 1875) --- ?

Family Dictynidae O. P.-Cambridge, 1871
Archaeodictyna anguiniceps (Simon, 1899) --- New Valley, Siwa Oasis, Wadi Natron
Archaeodictyna condocta (O.P.-Cambridge, 1876) --- Alexandria, Cairo, Lower Egypt, Suez
Devade indistincta (O.P.-Cambridge, 1872) --- Mariout, Siwa Oasis, Suez
Dictyna innocens O.P.-Cambridge, 1872 --- Cairo
Lathys humilis meridionalis (Simon, 1874) --- Alexandria
Nigma conducens O.P.-Cambridge, 1876 --- Cairo, Lower Egypt, Elephantine, Philoe island (Aswan), Wadi-Halfa

Family Dysderidae C.L. Koch, 1837
Dysdera crocota C.L.Koch, 1839 --- Alexandria
Dysdera erythrina (Walckenaer, 1802) --- ?
Dysdera lata Wider, 1834 --- Alexandria, Cairo
Dysdera lubrica Simon, 1907 --- Alexandria, Cairo *
Dysdera pharaonis Simon, 1907 --- Alexandria, Mariout *
Dysdera subnubila Simon, 1907 --- Alexandria, Cairo *
Dysdera westringii O.P.-Cambridge, 1872 --- Alexandria

Family Eresidae C.L. Koch, 1851
Dorceus quadrispilotus Simon, 1908 --- Alexandria, Mariout, west of El-Hammam *
Eresus pharaonis Walckenaer, 1837 --- ? *
Eresus semicanus Simon, 1908 --- Alexandria, Mariout, Suez
Stegodyphus dufouri (Audouin, 1825) --- Abu Galoum, Alexandria, Assiut, Aswan, Beni Suef, Cairo, Damietta, El-Baharia Oases, El-Fayum, El-Menoufeia, Giza, Ismailia, Luxor, Nile Barrage, Port Said, Qena, Sinai, Siwa Oasis, Sohag, Suez, Wadi El-Raiyan, Wadi Halfa, Wadi Natron
Stegodyphus lineatus (Latreille, 1817) --- Alexandria, Cairo, Damietta, El-Burullus, El-Shalateen and Bir El-Gahliya, El-Zaranik, Nabq, Ras El-Barr, Siwa Oasis, southern Sinai, Suez
Stegodyphus manicatus Simon, 1876 --- Cairo

Family Filistatidae Ausserer, 1867
Filistata insidiatrix (Forskål, 1775) --- Alexandria, Cairo, Lower Egypt, Siwa Oasis
Filistata puta O. P.-Cambridge, 1876 --- Alexandria
Sahastata nigra (Simon, 1897) --- Cairo, Luxor, Suez

Family Gnaphosidae Pocock, 1898
Aphantaulax albini (Audouin, 1825) --- ?
Aphantaulax cinctus (L.Koch, 1866) --- Alexandria
Berinda ensiger (O.P.-Cambridge, 1874) --- ?
Berlandina plumalis (O.P.-Cambridge, 1872) --- Alexandria, Cairo
Berlandina venatrix (O.P.-Cambridge, 1874) --- Alexandria, Aswan, Cairo, Luxor, Sinai, Siwa Oasis, Wadi Halfa
Drassodes alexandrinus (O.P.-Cambridge, 1874) --- Alexandria *
Drassodes unicolor (O. P.-Cambridge, 1872) --- ?
Haplodrassus dalmatensis (L. Koch, 1866) --- Cairo
Haplodrassus pugnans (Simon, 1880) --- El-Arish
Heser infumatus (O.P.-Cambridge, 1872) --- Cairo
Leptodrassus pupa Dalmas, 1919 --- Suez *
Megamyrmaekion caudatum Wider, 1834 --- ? *
Megamyrmaekion vulpinum (O.P.-Cambridge, 1874) --- Aswan, Cairo
Micaria ignea (O. P.-Cambridge, 1872) --- northern and southern (?) Sinai
Minosia pharao Dalmas, 1921 --- Alexandria, Cairo *
Minosia simeonica Levy, 1995 --- southern Sinai
Minosiella mediocris Dalmas, 1921 --- Cairo, El-Fayum, Siwa Oasis, Suez
Minosiella pharia Dalmas, 1921 --- Cairo
Nomisia aussereri (L.Koch, 1872) --- Alexandria, Cairo

Nomisia recepta (Pavesi, 1880) --- ?
Odontodrassus mundulus (O.P.-Cambridge, 1872) --- Cairo, southern Sinai
Poecilochroa antineae Fage, 1929 --- ? *
Poecilochroa pugnax (O.P.-Cambridge, 1874) --- Alexandria, Cairo, Ismailia, Siwa Oasis, Suez
Poecilochroa senilis (O.P.-Cambridge, 1872) --- Alexandria, El-Omayed
Pterotricha conspersa (O.P.-Cambridge, 1872) --- Cairo, Helwan, Pyramids (Giza), El-Burullus, Ras Mohammed, Siwa Oasis
Pterotricha dalmasi Fage, 1929 --- Nabq, Siwa Oasis
Pterotricha lentiginosa (C.L.Koch, 1837) --- ?
Pterotricha lesserti Dalmas, 1921 --- El-Arish, El-Zaranik, Rafah, Ras Sedr
Pterotricha linnaei (Audouin, 1825) --- ?
Pterotricha procera (O.P.-Cambridge, 1874) --- Alexandria, Cairo
Pterotricha schaefferi (Audouin, 1825) --- Alexandria, Aswan, Cairo, El-Omayed, Suez, Wadi El-Raiyan, Wadi Halfa
Setaphis mollis (O.P.-Cambridge, 1874) --- Alexandria
Setaphis subtilis (Simon, 1897) --- Cairo, Ismailia, Nile Delta, Ras El-Barr, Shebin El-Kom, Sohag, southern Sinai, Wadi El-Raiyan
Synaphosus gracillimus (O.P.-Cambridge, 1872) --- En Higiya (NE of Abu Zneima), Mount Serbal, Wadi Degla, Wadi Rishrash
Synaphosus intricatus (Denis, 1947) --- Siwa Oasis
Synaphosus minimus (Caporiacco, 1936) --- Dahab, Wadi Yah'med, El-Uwaynat
Synaphosus syntheticus (Chamberlin, 1924) --- Cairo (Zenhum, Helwan), Sohag
Talanites fervidus Simon, 1893 --- ?
Talanites ornatus (O.P.-Cambridge, 1874) --- Alexandria *
Trachyzelotes jaxartensis (Kroneberg, 1875) --- Assiut, Luxor
Trachyzelotes lyonneti (Audouin, 1825) --- ?
Urozelotes rusticus (L.Koch, 1872) --- Marsa Matruh, Siwa Oasis
Zelotes fagei Denis, 1955 --- ?
Zelotes laetus (O.P.-Cambridge, 1872) --- Alexandria, Cairo, Lower Egypt
Zelotes listeri (Audouin, 1825) --- southern Sinai *
Zelotes nilicola (O.P.-Cambridge, 1874) --- Alexandria, El-Tahrir Province, Nile Delta
Zelotes scrutatus (O. P.-Cambridge, 1872) --- Alexandria, Siwa Oasis *
Zelotes tenuis (L.Koch, 1866) --- Alexandria

Family Hersiliidae Thorell, 1870
Hersilia caudata Savigny, 1825 --- Cairo to Aswan
Hersiliola simoni (O.P.-Cambridge, 1872) --- Alexandria

Family Linyphiidae Blackwall, 1859
Bathyphantes extricatus (O.P.-Cambridge, 1876) --- Alexandria, Cairo *
Brachycerasphora parvicornis (Simon, 1884) --- Alexandria *
Erigone dentipalpis (Wider, 1834) --- El-Aasher-Min-Ramadan City, Nile Delta
Gnathonarium dentatum (Wider, 1834) --- Nile Delta
Gnathonarium dentatum orientale (O.P.-Cambridge, 1872) --- ?
Meioneta rurestris (C.L.Koch, 1836) --- Alexandria
Microctenonyx alexandrinus (O.P.-Cambridge, 1872) --- Alexandria
Prinerigone vagans (Savigny, 1825) --- Alexandria, Cairo, New Valley, Nile Delta, Wadi Natron

Silometopus curtus (Simon, 1881) --- ?

Family Liocranidae Simon, 1897
Mesiotelus alexandrinus (Simon, 1880) --- Edko *
Mesiotelus tenuissimus (L.Koch, 1866) --- Alexandria, Ismailia, southern Sinai

Family Lycosidae Sundevall, 1833
Allocosa deserticola (Simon, 1898) --- Saqqarah *
Allocosa tarentulina (Savigny, 1825) --- Alexandria
Allocosa tremens (O.P.-Cambridge, 1876) --- Alexandria
Alopecosella pelusiaca (Savigny, 1825) --- El-Manzalah
Arctosa cinerea (Fabricius, 1777) --- Siwa Oasis, southern Sinai, Upper Egypt, Wadi Natron
Arctosa depuncta (O.P.-Cambridge, 1876) --- Alexandria
Arctosa leopardus (Sundevall, 1832) --- Alexandria
Arctosa quadripunctata (Lucas, 1846) --- Siwa Oasis
Aulonia albimana (Walckenaer, 1805) --- ? *
Crocodilosa virulenta (O.P.-Cambridge, 1876) --- Cairo *
Evippa arenaria (Savigny, 1825) --- Rosetta
Evippa praelongipes (O.P.-Cambridge, 1870) --- southern Sinai
Evippa ungulata (O.P.-Cambridge, 1876) --- Aswan, Luxor, Siwa Oasis, Upper Egypt, Wadi El-Raiyan
Evippomma simoni Alderweireldt, 1992 --- Wadi Halfa
Geolycosa urbana (O.P.-Cambridge, 1876) --- Alexandria, Siwa Oasis
Hippasa innesi Simon, 1889 --- Cairo, Suez *
Hippasa partita (O.P.-Cambridge, 1876) --- Alexandria
Hippasa sinai Alderweireldt & Jocqué, 2005 --- Sinai
Hogna alexandria Roewer, 1960 --- Alexandria *
Hogna ferox (Lucas, 1838) --- Nile Delta, Siwa Oasis, Wadi Natron
Hogna peregrina (Savigny, 1825) --- Rosetta *
Hogna radiata (Latreille, 1817) --- Cairo
Hogna sinaia Roewer, 1959 --- Sinai
Hogna truculenta (O. P.-Cambridge, 1876) --- Alexandria
Hyaenosa effera (O.P.-Cambridge, 1872) --- Alexandria, Cairo
Lycosa cingara (C.L.Koch, 1847) --- ? *
Lycosa cretacea Simon, 1898 --- Saqqarah
Lycosa nilotica Savigny, 1825 --- Alexandria, Aswan, Cairo *
Lycosa tarantula (Linnaeus, 1758) --- southern Sinai
Megarctosa argentata (Denis, 1947) --- Siwa Oasis *
Ocyale atalanta Savigny, 1825 --- Wadi Natron
Ocyale pelliona (Savigny, 1825) --- Rosetta
Orinocosa priesneri Roewer, 1959 --- Djebl Bokas (?) *
Orthocosa ambigua (Denis, 1947) --- Siwa Oasis *
Pardosa iniqua (O.P.-Cambridge, 1876) --- Alexandria *
Pardosa injucunda (O.P.-Cambridge, 1876) --- Alexandria, Cairo, Siwa Oasis
Pardosa inopina (O.P.-Cambridge, 1876) --- Alexandria, Wadi Natron
Pardosa inquieta (O.P.-Cambridge, 1876) --- Alexandria *
Pardosa naevia (L. Koch, 1875) --- ? *
Pardosa observans (O.P.-Cambridge, 1876) --- Alexandria *

Pardosa serena (L.Koch, 1875) --- Cairo *
Pirata proximus O.P.-Cambridge, 1876 --- Alexandria *
Trochosa annulipes L.Koch, 1875 --- Cairo
Wadicosa fidelis (O.P.-Cambridge, 1872) --- Alexandria, Aswan, Cairo, Siwa Oasis, Suez, Wadi Natron

Family Mimetidae Simon, 1881
Mimetus monticola (Blackwall, 1870) --- Cairo

Family Miturgidae Simon, 1885
Cheiracanthium annulipes O.P.-Cambridge, 1872 --- Cairo, Philoe island (Aswan), Wadi Natron
Cheiracanthium canariense Wunderlich, 1987 --- El-Burullus, El-Zaranik
Cheiracanthium equestre O.P.-Cambridge, 1874 --- Cairo, Siwa Oasis
Cheiracanthium isiacum O.P.-Cambridge, 1874 --- Cairo, Nile Delta, Siwa Oasis, Sohag, Wadi Natron
Cheiracanthium jovium Denis, 1947 --- Siwa Oasis
Cheiracanthium mildei L.Koch, 1864 --- southern Sinai
Cheiracanthium pelasgicum (C.L.Koch, 1837) --- Beni Suef, Qalyubia, Rafah
Cheiracanthium siwi El-Hennawy, 2001 --- Siwa Oasis *
Cheiramiona dubia (O.P.-Cambridge, 1874) --- Alexandria *

Family Oecobiidae Blackwall, 1862
Oecobius amboseli Shear & Benoit, 1974 --- Cairo
Oecobius maculatus Simon, 1870 --- Giza
Oecobius navus Blackwall, 1859 --- Alexandria, Ismailia, Upper Egypt
Oecobius putus O.P.-Cambridge, 1876 --- Cairo, Giza, Ismailia, Upper Egypt
Oecobius templi O.P.-Cambridge, 1876 --- Cairo, Upper Egypt, Abu Galoum (?)
Uroctea durandi (Latreille, 1809) --- ?
Uroctea limbata (C.L.Koch, 1843) --- Alexandria, Abu Galoum, Nabq, Ras Mohammed

Family Oonopidae Simon, 1890
Dysderina scutata (O.P.-Cambridge, 1876) --- Alexandria, Cairo *
Gamasomorpha arabica Simon, 1893 --- Ain-Musa *
Gamasomorpha margaritae Denis, 1947 --- Siwa Oasis *
Opopaea punctata (O.P.-Cambridge, 1872) --- Ain-Musa, Alexandria
Sulsula pauper (O.P.-Cambridge, 1876) --- Alexandria

Family Oxyopidae Thorell, 1870
Oxyopes heterophthalmus (Latreille, 1804) --- Alexandria, Cairo, Sinai
Oxyopes lineatus Latreille, 1806 --- ?
Oxyopes sinaiticus Levy, 1999 --- Sinai ?
Peucetia arabica Simon, 1882 --- Cairo, Abu Galoum, Nabq, Ras Mohammed, St. Catherine, Siwa Oasis, Suez
Peucetia virescens (O.P.-Cambridge, 1872) --- Dakhla Oases
Peucetia viridis (Blackwall, 1858) --- Dahshur (Giza), Sinai

Family Palpimanidae Thorell, 1870
Palpimanus aegyptiacus Kulczyński, 1909 --- ? *
Palpimanus gibbulus Dufour, 1820 --- Alexandria, Cairo to Luxor, Nubia

Palpimanus uncatus Kulczyński, 1909 --- ? *

Family Philodromidae Thorell, 1870
Philodromus bigibbus (O.P.-Cambridge, 1876) --- Alexandria, Aswan
Philodromus cinereus O.P.-Cambridge, 1876 --- Cairo *
Philodromus clercki Audouin, 1825 --- ? *
Philodromus denisi Levy, 1977 --- Siwa Oasis *
Philodromus glaucinus Simon, 1870 --- Ismailia, Siwa Oasis, Upper Egypt
Philodromus lepidus Blackwall, 1870 --- Aswan, Cairo, Wadi Natron
Philodromus lugens (O.P.-Cambridge, 1876) --- Alexandria *
Philodromus omer-cooperi Denis, 1947 --- Siwa Oasis *
Philodromus sinaiticus Levy, 1977 --- Ras Mohammed *
Philodromus venustus O.P.-Cambridge, 1876 --- Cairo to Manfalut *
Thanatus albini (Audouin, 1825) --- Cairo, El-Tahrir Province, New Valley, Nile Delta, Siwa Oasis, Sohag
Thanatus fabricii (Audouin, 1825) --- Alexandria, Siwa Oasis
Thanatus flavescens O.P.-Cambridge, 1876 --- Cairo *
Thanatus flavus O.P.-Cambridge, 1876 --- Alexandria *
Thanatus formicinus (Clerck, 1757) --- ?
Thanatus fornicatus Simon, 1897 --- Sinai
Thanatus lesserti (Roewer, 1951) --- Cairo
Tibellus vossioni Simon, 1884 --- Siwa Oasis

Family Pholcidae C.L. Koch, 1851
Artema atlanta Walckenaer, 1837 --- Cairo, Siwa Oasis, Sohag, Wadi Natron
Crossopriza semicaudata (O.P.-Cambridge, 1876) --- Cairo to Luxor
Holocnemus pluchei (Scopoli, 1763) --- Alexandria, Cairo, Nabq, Wadi Natron
Micropholcus fauroti (Simon, 1887) --- ?
Pholcus phalangioides (Fuesslin, 1775) --- Alexandria

Family Pisauridae Simon, 1890
Dolomedes hyppomene Savigny, 1825 --- Damietta *
Nilus curtus O.P.-Cambridge, 1876 --- Alexandria *
Pisaura mirabilis (Clerck, 1757) --- ?
Rothus atlanticus Simon, 1898 --- Siwa Oasis

Family Prodidomidae Simon, 1884
Prodidomus amaranthinus (Lucas, 1846) --- Alexandria, Cairo
Zimirina vastitatis Cooke, 1964 --- El-Sallum
Zimiris sp. --- Heliopolis-Cairo (inside a house) [Unpublished record]

Family Salticidae Blackwall, 1841
Aelurillus catherinae Prószyński, 2000 --- St. Catherine *
Aelurillus conveniens (O.P.-Cambridge, 1872) --- Siwa Oasis, Mid Sinai
Aelurillus dorthesi (Audouin, 1825) --- Cairo, Wadi Natron *
Aelurillus hirtipes Denis, 1960 --- Watia Pass (Mid Sinai)
Aelurillus luctuosus (Lucas, 1846) --- Lower Egypt
Aelurillus monardi (Lucas, 1846) --- Cairo, Lower Egypt
Aelurillus sinaicus Prószyński, 2000 --- north of Mid Sinai
Ballus piger O.P.-Cambridge, 1876 --- Upper Egypt *

Bianor albobimaculatus (Lucas, 1846) --- Alexandria, Cairo, Siwa Oasis, Suez
Carrhotus occidentalis (Denis, 1947) --- Siwa Oasis *
Chalcoscirtus catherinae Prószyński, 2000 --- St. Catherine, near Taba
Cosmophasis nigrocyanea (Simon, 1885) --- Siwa Oasis
Euophrys catherinae Prószyński, 2000 --- St. Catherine, southern Sinai *
Euophrys granulata Denis, 1947 --- Siwa Oasis *
Festucula vermiformis Simon, 1901 --- Alexandria, Suez *
Hasarius adansoni (Audouin, 1825) --- Alexandria, Cairo, Ras El-Barr
Heliophanillus fulgens (O.P.-Cambridge, 1872) ---Alexandria, Cairo, Siwa Oasis, Upper Egypt
Heliophanillus lucipeta (Simon, 1890) --- Alexandria, Suez
Heliophanus cupreus (Walckenaer, 1802) --- ?
Heliophanus decoratus L.Koch, 1875 --- Alexandria, Cairo, El-Zaranik, Siwa Oasis, Suez, Wadi Natron
Heliophanus edentulus Simon, 1871 --- Alexandria
Heliophanus glaucus Bösenberg & Lenz, 1894 --- Alexandria, Siwa Oasis
Hyllus plexippoides Simon, 1906 --- ?
Langona alfensis Hęciak & Prószyński, 1983 --- Wadi Halfa
Langona mallezi (Denis, 1947) --- Siwa Oasis *
Langona redii (Audouin, 1825) --- Alexandria, Cairo
Mendoza canestrinii (Ninni, 1868) --- Alexandria
Menemerus animatus O.P.-Cambridge, 1876 ---Alexandria, Cairo, El-Omayed, El-Zaranik, Ras El-Barr, Siwa Oasis, Upper Egypt, Wadi Natron
Menemerus gesneri (Audouin, 1825) --- ?
Menemerus heydeni Simon, 1868 --- Cairo, Upper Egypt
Menemerus hunteri (Audouin, 1825) --- ?
Menemerus illigeri (Audouin, 1825) --- Cairo
Menemerus semilimbatus (Hahn, 1829) --- Cairo
Menemerus soldani (Audouin, 1825) --- Alexandria, Siwa Oasis
Modunda staintoni (O.P.-Cambridge, 1872) --- Upper Egypt, Suez
Mogrus bonneti (Audouin, 1825) --- Alexandria, Siwa Oasis, Upper Egypt, Wadi El-Raiyan, Wadi Natron
Mogrus canescens (C.L.Koch, 1846) --- ?
Mogrus fulvovittatus Simon, 1882 --- El-Burullus, El-Omayed, El-Zaranik, Nabq, Ras El-Barr
Mogrus mirabilis Wesolowska & van Harten, 1994 --- Wadi Halfa
Mogrus sinaicus Prószyński, 2000 --- Ras Mohammed, St. Catherine
Myrmarachne kiboschensis Lessert, 1925 --- Cairo
Myrmarachne tristis (Simon, 1882) --- El-Zaranik, Nabq
Natta horizontalis Karsch, 1879 --- ?
Neaetha aegyptiaca Denis, 1947 --- Siwa Oasis *
Neaetha cerussata (Simon, 1868) --- ?
Neaetha oculata (O.P.-Cambridge, 1876) --- Upper Egypt
Pachypoessa plebeja (L.Koch, 1875) --- Cairo
Paraneaetha diversa Denis, 1947 --- Siwa Oasis *
Pellenes frischi (Audouin, 1825) --- ? *
Philaeus chrysops (Poda, 1761) --- southern Sinai
Phlegra flavipes Denis, 1947 --- Siwa Oasis *

Phlegra memorialis (O.P.-Cambridge, 1876) --- Siwa Oasis, Upper Egypt *
Phlegra pori Prószyński, 1998 --- Mt. Catherina (southern Sinai)
Phlegra proxima Denis, 1947 --- Siwa Oasis *
Plexippoides flavescens (O.P.-Cambridge, 1872) --- St. Catherine
Plexippus paykulli (Audouin, 1825) --- Abu Galoum, Alexandria, Cairo, El-Shalateen, Bir El-Gahliya, El-Zaranik, southern Sinai
Pseudicius spiniger (O.P.-Cambridge, 1872) --- Aswan, Cairo, Upper Egypt
Pseudicius tamaricis Simon, 1885 --- Siwa Oasis, Wadi Natron
Rafalus christophori Prószyński, 1999 --- St. Catherine
Rafalus feliksi Prószyński, 1999 --- north west Wadi Esla *
Salticus druryi Audouin, 1825 --- ?
Salticus mendicus O.P.-Cambridge, 1876 --- Alexandria to Aswan
Salticus mouffeti Audouin, 1825 --- Alexandria
Salticus paludivagus Lucas, 1846 --- Alexandria
Salticus propinquus Lucas, 1846 --- Alexandria, Kafr El-Sheikh
Stenaelurillus werneri Simon, 1906 --- ?
Synageles dalmaticus (Keyserling, 1863) --- Alexandria, Cairo
Synageles repudiatus (O.P.-Cambridge, 1876) --- Alexandria, Siwa Oasis *
Thyene imperialis (Rossi, 1846) --- Aswan, Cairo, El-Tahrir Province, Nabq, New Valley, Sharm El-Sheikh, Siwa Oasis, Upper Egypt
Thyenula ammonis Denis, 1947 --- Siwa Oasis *
Yllenus saliens O.P.-Cambridge, 1876 --- Alexandria, Cairo, El-Uwaynat, Suez, Upper Egypt
Yllenus tschoni (Caporiacco, 1936) --- ?

Family Scytodidae Blackwall, 1864
Scytodes bertheloti Lucas, 1838 --- Wadi Natron
Scytodes immaculata L.Koch, 1875 --- Alexandria, Cairo, El-Fayum, Upper Egypt, Wadi Halfa *
Scytodes obelisci Denis, 1947 --- Luxor *
Scytodes thoracica (Latreille, 1802) --- Cairo, Siwa Oasis
Scytodes velutina Heineken & Lowe, 1836 --- Cairo, Siwa Oasis, Wadi Natron

Family Segestriidae Simon, 1893
Ariadna insidiatrix Savigny, 1825 --- Alexandria, Cairo
Segestria florentina (Rossi, 1790) --- Alexandria, Lower Egypt, south west Sinai

Family Selenopidae Simon, 1897
Selenops radiatus Latreille, 1819 --- Wadi Natron, Nile Valley

Family Sicariidae Keyserling, 1880
Loxosceles rufescens (Dufour, 1820) --- Alexandria, Cairo, Siwa Oasis

Family Sparassidae Bertkau, 1872
Cebrennus aethiopicus Simon, 1880 --- Nubia
Cebrennus castaneitarsis Simon, 1880 --- Sinai
Cebrennus concolor (Denis, 1947) --- Siwa Oasis *
Cerbalus pellitus Kritscher, 1960 --- Fayed *
Cerbalus psammodes Levy, 1989 --- El-Zaranik
Cerbalus pulcherrimus (Simon, 1880) --- Aswan, Wadi Natron

Eusparassus bicorniger (Pocock, 1898) --- ?
Eusparassus dufouri Simon, 1932 --- ?
Eusparassus oraniensis (Lucas, 1846) --- Siwa Oasis
Eusparassus walckenaeri (Audouin, 1825) --- Cairo, El-Shalateen, Bir El-Gahliya, Siwa Oasis, southern Sinai, Upper Egypt, Wadi Natron
Gnathopalystes crucifer (Simon, 1880) --- (Port Said?) ?
Heteropoda variegata (Simon, 1874) --- ?
Olios suavis (O.P.-Cambridge, 1876) --- Siwa Oasis, near Gebel Silsilis (Upper Egypt)

Family Synaphridae Wunderlich, 1986
Synaphris letourneuxi (Simon, 1884) --- ? *

Family Tetragnathidae Menge, 1866
Dyschiriognatha argyrostilba (O.P.-Cambridge, 1876) --- Alexandria *
Tetragnatha chrysochlora (Audouin, 1825) --- ?
Tetragnatha flava (Savigny, 1825) --- Alexandria, Rosetta *
Tetragnatha isidis (Simon, 1880) --- Alexandria
Tetragnatha nitens (Savigny, 1825) --- Alexandria, Cairo, Manzalah, Rosetta, Siwa Oasis, Wadi El-Raiyan, Wadi Natron

Family Theridiidae Sundevall, 1833
Argyrodes argyrodes (Walckenaer, 1842) --- Siwa Oasis
Crustulina conspicua (O.P.-Cambridge, 1872) --- Giza
Enoplognatha deserta Levy & Amitai, 1981 --- St. Catherine
Enoplognatha gemina Bosmans & Van Keer, 1999 --- Alexandria, Cairo
Euryopis albomaculata Denis, 1951 --- ? *
Euryopis campestrata Simon, 1907 --- Cairo *
Euryopis episinoides (Walckenaer, 1847) --- Alexandria, Giza, Ismailia
Euryopis quinqueguttata Thorell, 1875 --- Siwa Oasis
Kochiura aulica (C.L.Koch, 1838) --- Alexandria, Nile Delta, Siwa Oasis, Wadi Natron
Latrodectus pallidus O.P.-Cambridge, 1872 --- Alexandria, El-Zaranik, Nabq
Latrodectus tredecimguttatus (Rossi, 1790) --- Alexandria, El-Tahrir Province, Salahyeh, Mid Sinai, Nabq
Nesticodes rufipes (Lucas, 1846) --- Cairo
Paidiscura dromedaria (Simon, 1880) --- Ismailia, El-Zaranik, Nabq
Steatoda ephippiata (Thorell, 1875) --- El-Omayed, El-Zaranik, Mid Sinai
Steatoda erigoniformis (O.P.-Cambridge, 1872) --- Alexandria, Nile Delta
Steatoda latifasciata (Simon, 1873) --- Mid Sinai, St. Catherine
Steatoda paykulliana (Walckenaer, 1805) --- Alexandria, El-Burullus, El-Zaranik, southern Sinai
Steatoda triangulosa (Walckenaer, 1802) --- Cairo, Wadi Natron, El-Zaranik
Steatoda venator (Savigny, 1825) --- Alexandria *
Theridion melanostictum O.P.-Cambridge, 1876 --- Alexandria, Nile Delta, El-Zaranik
Theridion musivum Simon, 1873 --- Mid Sinai
Theridion nigrovariegatum Simon, 1873 --- Alexandria, Ismailia, Siwa Oasis, Suez
Theridion spinitarse O.P.-Cambridge, 1876 --- Cairo, Luxor
Theridion varians Hahn, 1833--- Alexandria

Family Thomisidae Sundevall, 1833
Firmicus dewitzi Simon, 1899 --- Wadi Natron
Heriaeus buffoni (Audouin, 1825) --- Ras Mohammed
Misumena atrocincta Costa, 1875 --- ? *
Ozyptila judaea Levy, 1975 --- Sinai (near Taba)
Ozyptila subclavata (O.P.-Cambridge, 1876) --- Alexandria
Pistius truncatus (Pallas, 1772) --- ?
Runcinia grammica (C.L.Koch, 1837) --- Alexandria, El-Arish, El-Bawitti, Fatira, Kom Osheem
Synema candicans (O.P.-Cambridge, 1876) --- Alexandria *
Synema diana (Audouin, 1825) --- Cairo to Luxor, Fatira, Kom Osheem, Nabq, Ras El-Barr, Siwa Oasis, Wadi Esla, Wadi Natron
Synema globosum (Fabricius, 1775) --- ?
Synema valentinieri Dahl, 1907 --- Upper Egypt *
Thomisus bidentatus Kulczyński, 1901 --- southern Sinai
Thomisus onustus Walckenaer, 1805 --- El-Zaranik, Kom Osheem, Ras El-Barr, Siwa Oasis, southern Sinai, Wadi El-Raiyan
Thomisus spinifer O.P.-Cambridge, 1872 --- Aswan, Cairo to Luxor, El-Arish, El-Bawitti, Fatira, Nile Delta, Siwa Oasis, Wadi Natron
Tmarus piochardi (Simon, 1866) --- Siwa Oasis
Xysticus bliteus (Simon, 1875) --- Alexandria, Cairo
Xysticus clercki (Audouin, 1825) --- ?
Xysticus cristatus (Clerck, 1757) --- Alexandria
Xysticus ferus O.P.-Cambridge, 1876 --- Alexandria, southern Sinai
Xysticus lalandei (Audouin, 1825) --- Cairo, southwestern Sinai *
Xysticus peccans O.P.-Cambridge, 1876 --- ? *
Xysticus promiscuus O. P.-Cambridge, 1876 --- Alexandria
Xysticus sabulosus (Hahn, 1832) --- ?
Xysticus sinaiticus Levy, 1999 --- ?
Xysticus tristrami (O.P.-Cambridge, 1872) --- Cairo (Giza), Rafah, St. Catherine

Family Titanoecidae Lehtinen, 1967
Nurscia albomaculata (Lucas, 1846) --- Alexandria, Cairo (Giza)
Titanoeca tristis L.Koch, 1872 --- ?

Family Uloboridae Thorell, 1869
Uloborus plumipes Lucas, 1846 --- Cairo to Assiut, Nile Valley, near Red Sea, Siwa Oasis
Uloborus walckenaerius Latreille, 1806 --- El-Zaranik, Siwa Oasis

Family Zodariidae Thorell, 1881
Lachesana perversa (Savigny, 1825) --- Cairo, El-Zaranik
Palaestina eremica Levy, 1992 --- St. Catherine
Ranops expers (O.P.-Cambridge, 1876) --- Alexandria, St. Catherine
Trygetus riyadhensis Ono & Jocqué, 1986 --- St. Catherine
Trygetus sexoculatus (O.P.-Cambridge, 1872) --- Suez, west of southern Sinai
Zodarion cyrenaicum Denis, 1935 --- ?
Zodarion nitidum (Savigny, 1825) --- Alexandria, Cairo, northern Sinai
Zodarion pileolonotatum Denis, 1935 --- Siwa Oasis

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